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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Thomas R. POTTER, SR.

Art Unit: Unknown

Examiner: Unknown

Continuation in Part of:

(1) Application Serial No. : 08/720,721 Filed: 10/2/96

(2) Application Serial No. : 09/525,148 Filed: 3/14/2000

ELECTRONIC PARKING METER SYSTEM (AS AMENDED)

\* \* \* \* \*

Alexandria, VA

30 May 2001

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

S I R:

This Preliminary Amendment accompanies the filing of the subject Continuation-in-Part application and it is requested that the subject application be amended as indicated herein prior to an action on the merits.

IN THE CLAIMS:

Cancel claims 1-24 and add the following claims 25-63.

25. An electronic parking meter system comprising:

an electronic parking meter for determining the time a parking space associated with the parking meter is occupied by a vehicle and receiving coins denoting desired parking time and indicating said time;

an inductive loop vehicle detection sensor located to detect both the physical presence or absence of a vehicle in said parking space and emitting a respective signal indicative thereof;

AMENDMENT - CIP APPLICATION  
POTTER, SR. ET AL.

a microprocessor controller coupled to the sensor and the electronic parking meter for selectively controlling the electronic parking meter and the controller responsive to the sensor signal; and

the electronic parking meter indicating time provided upon payment with a vehicle occupying said space to obtain a fixed amount of time in accordance with the amount of payment, said electronic parking meter decrementing the indicated time;

and said controller initializing said electronic parking meter to zero when the sensor signals the controller that a vehicle no longer occupies the parking space.

26. The electronic parking meter of claim 25, wherein said microprocessor controller further including a solar power regulator and further comprising a solar energy power supply coupled to said solar power regulator and including at least one solar panel.

27. The electronic parking meter of claim 26, wherein said at least one solar panel is mounted on said electronic parking meter.

28. The electronic parking meter of claim 26, wherein said at least one solar panel is mounted at a location remote from said electronic parking meter.

29. An electronic parking meter system according to claim 25, wherein said electronic parking meter further including means for counting coins deposited therein and setting a time interval in accordance with the amount of coins deposited; means for notifying the controller of the amount of coins deposited; means for

continuously measuring the amount of time remaining in said time interval; and means for displaying the amount of time remaining on the meter and flashing "zero" to indicate "zero" time.

30. An electronic parking meter system according to claim 25, wherein said electronic parking meter further including means for signalling the controller that a vehicle is in the parking space and that no coins have been deposited in the electronic parking meter.

31. An electronic parking system according to claim 30, wherein said electronic parking meter further including means for delaying the notification of the controller of the depositing of coins in the electronic parking meter from the time that the detection sensor detects the presence of a vehicle in said parking space.

32. An electronic parking meter system comprising:

multiple electronic parking meters, each electronic parking meter respectively determining the time a parking space associated with the respective electronic parking meter is occupied by a vehicle and receiving coins denoting desired parking time and indicating said time;

multiple inductive loop vehicle detection sensors and each respective inductive loop vehicle detection sensor being located to detect both the physical presence or absence of a vehicle in said respective parking space and emitting a respective signal indicative thereof;

multiple microprocessor controllers, each controller being

6coupled to a corresponding sensor and a corresponding electronic parking meter for selectively controlling each electronic parking meter and each controller responsive to a respective sensor signal;

each electronic parking meter indicating time provided upon payment with a vehicle occupying said space to obtain a fixed amount of time in accordance with the amount of payment, each said electronic parking meter decrementing the indicated time;

and said controller initializing said electronic parking meter to zero when the corresponding sensor signals the corresponding controller that a vehicle no longer occupies the corresponding parking space of the associated meter.

33. The electronic parking meter system according to claim 32, wherein a corresponding one of said multiple parking meters including means for counting coins deposited therein and setting a time interval in accordance with the amount of coins deposited;

means for notifying the corresponding microprocessor controller of the amount of coins deposited;

means for continuously measuring the amount of time remaining in said time interval; and

means for displaying the amount of time remaining on the corresponding electronic parking meter and flashing "zero" to indicate "zero" time.

34. An electronic parking meter system according to claim 32, wherein said corresponding one of said multiple electronic parking meters further including means for signalling the corresponding

controller that a vehicle is in the parking space and that no coins have been deposited in the meter.

35. An electronic parking system according to claim 34, wherein said corresponding one of said multiple electronic parking meters further including means for delaying the notification of the corresponding controller of the depositing of coins in the corresponding electronic parking meter from the time that the corresponding detection sensor detects the presence of a vehicle in the corresponding parking space.

36. An electronic parking meter comprising:

multiple electronic parking meters, each electronic parking meter respectively determining the time a parking space associated with the respective electronic parking meter is occupied by a vehicle and receiving coins denoting desired parking time and indicating said time;

multiple inductive loop vehicle detection sensors and each respective inductive loop vehicle detection sensor located to detect both the physical presence or absence of a vehicle in a respective parking space and emitting a signal indicative thereof;

multiple microprocessor controllers, each controller being coupled to a corresponding sensor and a corresponding electronic parking meter for selectively controlling each electronic parking meter and each controller responsive to a respective sensor signal;

a CPU coupled to each electronic parking meter for data

transmission; and

each electronic parking meter indicating time provided upon payment with a vehicle occupying said space to obtain a fixed amount of time in accordance with the amount of payment, each said electronic parking meter decrementing the indicated time;

and each said controller intializing said electronic parking meter to zero when the corresponding sensor signals the corresponding controller that a vehicle no longer occupies the corresponding parking space of the associated electronic parking meter.

37. The electronic parking meter system according to claim 36, wherein said electronic parking meters each including means for counting coins deposited therein and setting a time interval in accordance with the amount of coins deposited;

means for notifying the corresponding microprocessor controller of the amount of coins deposited;

means for continuously measuring the amount of time remaining in said time interval;

and means for displaying the amount of time remaining on the electronic parking meter and flashing "zero" to indicate "zero" time.

38. An electronic parking meter system according to claim 36, wherein said corresponding one of said multiple electronic parking meters further including means for signalling the corresponding controller that a vehicle is in the parking space and that no coins

have been deposited in the electronic parking meter.

39. An electronic parking meter system according to claim 38, wherein said corresponding one of said multiple electronic parking meters further including means for delaying the notification of the corresponding controller of the depositing of coins in the corresponding electronic parking meter from the time that the corresponding detection sensor detects the presence of a vehicle in the corresponding parking space.

40. An induction coil vehicle detection sensor for detecting both the physical presence or absence of a vehicle in a parking space, comprising:

a winding of several loops wound one on top of the other;

means for securing the four loops to preserve the axial orientation of the winding and maintain the signal output from the winding;

the winding being embedded in the parking space; and

the respective ends of the winding being twisted with respect to one another to reduce the electric field effects of the winding.

41. The inductive loop as claimed in claim 40, wherein the winding has a diameter between one and eight feet and is centrally located in the parking space.

42. A component of an electronic parking meter system, comprising:

an inductive loop vehicle detection sensor located to detect both the physical presence or absence of a vehicle in said parking space and emitting a respective signal indicative thereof; the

inductive loop comprising a winding of several loops wound one on top of the other; means for securing the several loops to preserve the axial orientation of the winding and maintain the signal output from the winding; the winding being embedded in the parking space; and the respective ends of the winding being twisted with respect to one another to reduce the electric field effects of the winding;

an electronic parking meter for determining the time a parking space associated with the electronic parking meter is occupied by a vehicle and receiving coins denoting desired parking time and indicating said time; and

a microprosser controller coupled to the sensor and the electronic parking meter and receiving the respective signal from said inductive loop and indicative of the presence or absence of a vehicle for selectively controlling the electronic parking meter.

43. The electronic parking meter of claim 42, wherein said microprocessor contoller further including a solar power regulator and further comprising a solar energy power supply coupled to said solar power regulator and including at least one solar panel.

44. The electronic parking meter of claim 43, wherein said at least one solar panel is mounted on said electronic parking meter.

45. The electronic parking meter of claim 43, wherein said at least one solar panel is mounted at a location remote from said electronic parking meter.



46. A component of an electronic parking meter system, comprising:

an inductive vehicle detection sensor located to detect both the physical presence or absence of a vehicle in said parking space and emitting a respective signal indicative thereof;

an electronic parking meter for determining the time a parking space associated with the electronic parking meter is occupied by a vehicle and receiving coins denoting desired parking time and indicating said time;

a microprocessor controller coupled to the sensor and the electronic parking meter and receiving the respective signal indicative of the presence or absence of a vehicle for selectively controlling the electronic parking meter; and

said controller initializing said electronic parking meter to zero when the sensor signals the controller that a vehicle no longer occupies the parking space.

47. The component of an electronic parking meter system of claim 46, wherein said controller minimizes power consumption by de-energizing the sensor in response to no time displayed on the electronic parking meter.

48. The component of an electronic parking meter system of claim 46, wherein said controller de-energizes the sensor with no time displayed on the electronic parking meter to prevent the sensor from generating a false output with the entry or departure of a vehicle from the parking space.

49. The component of an electronic parking meter system of claim 46, wherein said controller causes the electronic parking meter to emit a flashing signal regardless of the presence or absence of a vehicle in the parking space.

50. The component of an electronic parking meter system of claim 46, wherein said controller in response to a signal from said sensor indicating the presence of a vehicle and a signal from said electronic parking meter that time is displayed generates a vehicle present signal.

51. The component of an electronic parking meter system of claim 47, wherein said microprocessor controller de-energizes the sensor with no time displayed on the electronic parking meter to prevent the sensor from generating a false output with the entry or departure of a vehicle from the parking space.

52. The component of an electronic parking meter system of claim 51, wherein said microprocessor controller causes the electronic parking meter to emit a flashing signal regardless of the presence or absence of a vehicle in the parking space.

53. The component of an electronic parking meter system of claim 52, wherein said controller in response to a signal from said sensor indicating the presence of a vehicle and a signal from said electronic parking meter that time is displayed generates a vehicle present signal.

54. The component of an electronic parking meter system of claim 47, wherein said controller initializes said electronic parking meter to zero when the sensor signals the controller that a vehicle no longer occupies the parking space.

55. The component of an electronic parking meter system of claim 52, wherein said controller minimizes power consumption by de-energizing the sensor in response to no time displayed on the electronic parking meter.

56. The component of an electronic parking meter system of claim 42, wherein said controller de-energizes the sensor with no time displayed on the electronic parking meter to prevent the sensor from generating a false output with the entry or departure of a vehicle from the parking space.

57. The component of an electronic parking meter system of claim 42, wherein said controller causes the electronic parking meter to emit a flashing signal regardless of the presence or absence of a vehicle in the parking space.

58. The component of an electronic parking meter system of claim 47, wherein said controller in response to a signal from said sensor indicating the presence of a vehicle and a signal from said electronic parking meter that time is displayed generates a vehicle present signal.

59. The component of an electronic parking meter system of claim 54, wherein said controller minimizes power consumption by de-energizing the sensor in response to no time displayed on the

electronic parking meter.

60. The component of an electronic parking meter system of claim 55, wherein said controller de-energizes the sensor with no time displayed on the electronic parking meter to prevent the sensor from generating a false output with the entry or departure of a vehicle from the parking space.

61. The component of an electronic parking meter system of claim 56, wherein said controller causes the electronic parking meter to emit a flashing signal regardless of the presence or absence of a vehicle in the parking space.

62. The component of an electronic parking meter system of claim 55, wherein said controller in response to a signal from said sensor indicating the presence of a vehicle and a signal from said electronic parking meter that time is displayed generates a vehicle present signal.

63. The electronic parking meter system of claims 25, 32, 36, 42 and 46, wherein said detection sensor includes a variable oscillator circuit oscillating at a base frequency and responsive to the inductance of the inductive loop for indicating the presence or absence of a vehicle in the parking space;

said microprocessor controller including a crystal oscillator operating at approximately 50 times the base frequency of the variable oscillator circuit and providing a signal including the crystal oscillator for controlling the variable oscillator circuit;

the presence or absence of a vehicle in the parking space

causing a respective decrease or increase in the inductance of the inductive loop and a respective commensurate increase or decrease in the operating frequency and a respective decrease or increase in the period of the variable oscillator circuit, thereby decreasing or increasing the number of crystal oscillator pulses in each period of the variable oscillator circuit;

said oscillator providing an output signal including said crystal oscillator pulses to said microprocessor controller; and

said microprocessor controller counting the number of pulses in a given cycle of operation of the variable oscillator circuit to determine the presence or absence of a vehicle in the parking space.

#### IN THE SPECIFICATION:

Before "BACKGROUND OF THE INVENTION" insert:

##### --CROSS-RELATED PATENT APPLICATIONS

This application is a continuation-in-part of pending application Serial No. 08/720,721, filed 3/14/96 and pending patent application Serial No. 09/525,148, filed 10/2/2000.--

## REMARKS

LARSON &amp; TAYLOR

It is noted that this application is filed under 37 CFR 1.53(b) without a filing fee and declaration. The applicants are claiming the filing date of copending applications Serial No. 08/720,721, filed 2 October 96 and now on appeal, and application Serial No. 09/524,148, filed 14 March 2000. A Response to a Notice to File Missing Parts (Filing Date Granted) dated 17 May 2000 is filed on even date herewith in the pertinent application. Thus, the subject parent applications are now copending with the subject application and therefore the subject application is entitled to the benefit of 35 U.S.C. 120.

The specification has been amended to include a cross reference to the parent applications.

By the above amendments original claims 1-19 of application Serial No. 08/720,721 and original claims 1-5 (claims 20-24 herein) are cancelled and claims 25-63 added for purposes of examination of the subject application.

The applicants request that the newly added claims be made of record in the subject application before an action on the merits.

Respectfully submitted,  
Thomas R. POTTER ET AL.

By-----  
R. J. Lasker 22785  
Larson & Taylor, PLC  
Attorneys for Applicant(s)  
Suite 900  
1199 North Fairfax Street  
Alexandria, VA 22314  
(703) 739-4900

30170.AMD

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